

Korean Journal of Chemical Engineering

December 2020
Volume 37, Number 12

Korean J. Chem. Eng. 37(12) 2085-2406
Print ISSN 0256-1115
Online ISSN 1975-7220

PROCESS SYSTEMS ENGINEERING, PROCESS SAFETY

- Jonghun Lim, Yeongryeol Choi, 2085 **Modeling of the wet flue gas desulfurization system to utilize low-grade limestone**
Geonyeo Kim, and Junghwan Kim

TRANSPORT PHENOMENA

- Mukesh Upadhyay, Myung Won Seo, 2094 **Experiment and multiphase CFD simulation of gas-solid flow in a CFB reactor at various operating conditions: Assessing the performance of 2D and 3D simulations**
Parlikkad Rajan Naren, Jong-Ho Park,
Thanh Dang Binh Nguyen,
Kashif Rashid, and Hankwon Lim
- Cong Qi, Tiantian Chen, Jianglin Tu, 2104 **Effects of heat sink structure on heat transfer performance cooled by semiconductor and nanofluids**
and Yuxing Wang
- Behrouz Behdani, Saman Monjezi, 2117 **Direct numerical simulation of microbubble streaming in a microfluidic device: The effect of the bubble protrusion depth on the vortex pattern**
Jie Zhang, Cheng Wang,
and Joontaek Park
- Jassem Abbasi, Mojtaba Ghaedi, 2124 **A multiscale study on the effects of dynamic capillary pressure in two-phase flow in porous media**
and Masoud Riazi
- Bookun Kim, Hwang Lee, 2136 **Image cytometry of irregular microplastic particles in a cross-slot microchannel utilizing viscoelastic focusing**
Seong Jae Lee, Jung-Hwan Kwon,
and Ju Min Kim

CATALYSIS, REACTION ENGINEERING

- Guangyu Shi, Yuanhao Wang, 2143 **Synthesis of high-performance Ni/Ce_{0.8}Zr_{0.2}O₂ catalyst via co-nanocasting method for ethanol dry reforming**
Yafeng Cao, Weijie Cai, and Fengzhi Tan
- Junchao Xu, Xiangyang Zhang, 2152 **Improvement of low-temperature NH₃-SCR catalytic activity over Mn-Ce oxide catalysts supported on sewage sludge char activated with KOH and H₃PO₄**
Yunlan Sun, Hongming Long,
and Zhimin Zheng
- Chul Hae Ryu, Young-Hoon Cho, 2161 **A comparative unit production cost prediction on isomerization by AlCl₃ in comparison with HY(30) zeolite for the synthesis of tetrahydro tricyclopentadiene through a two-step process**
Byunghun Jeong, Donguk Seo,
Minjun Seong, and Kwan-Young Lee

ENVIRONMENTAL ENGINEERING

- Myung-Goo Lee, Hae-Wook Yoo, 2171 **Inkjet-printed low-cost colorimetric tickets for TNT detection in contaminated soil**
Sung H. Lim, and Gi-Ra Yi
- Tan Yan Ying, Abdul Aziz Abdul Raman, 2179 **Magnetic graphene oxide-biomass activated carbon composite for dye removal**
Mustapha Mohammed Bello,
and Archina Buthiyappan
- Seyedeh Mahtab Pormazar 2192 **Adsorption of Direct Red 23 dye from aqueous solution by means of modified montmorillonite nanoclay as a superadsorbent: Mechanism, kinetic and isotherm studies**
and Arash Dalvand
- Lijuan Wang, Zhaojun Li, 2202 **High capacity ethidium bromide removal by montmorillonites**
Xingrong Zhang, Guocheng Lv,
and Xisen Wang
- Jung Eun Park, Ha Eun Shim, 2209 **A functionalized nanocomposite adsorbent for the sequential removal of radioactive iodine and cobalt ions in aqueous media**
Sajid Mushtaq, Yong Jun Choi,
and Jongho Jeon

BIOTECHNOLOGY

- Zafer Çiplak, Bengü Getiren, Ceren Gökalp, Ceren Atila Dinçer, Atila Yıldız, and Nuray Yıldız 2216 Simultaneous biosynthesis of reduced graphene oxide-Ag-Cu₂O nanostructures by lichen extract for catalytic reduction of textile dyes
- Jun Young Park, Ye-Lim Park, Tae-Rim Choi, Hyun Joong Kim, Hun-Suk Song, Yeong-Hoon Han, Sun Mi Lee, Sol Lee Park, Hye Soo Lee, Shashi Kant Bhatia, Ranjit Gurav, and Yung-Hun Yang 2225 Production of γ -aminobutyric acid from monosodium glutamate using *Escherichia coli* whole-cell biocatalysis with glutamate decarboxylase from *Lactobacillus brevis* KCTC 3498

SEPARATION TECHNOLOGY, THERMODYNAMICS

- Solmaz Valizadeh, Leila Naji, and Mohammad Karimi 2232 Robust siloxane/graphene oxide thin film membranes: Siloxane size adjustment for improved separation performance and flux recovery
- Manikandan Gomathy Nainar, Kalidass Jayaraman, Helen Kalavathy Meyyappan, and Lima Rose Miranda 2248 Antifouling properties of poly(vinylidene fluoride)-incorporated cellulose acetate composite ultrafiltration membranes
- Thuy Thi Le Bui, Ha Thi Ngoc Uong, Duy Khac Nguyen, Dung Thi Kim Hoang, and Giang Vo-Thanh 2262 Using solid carriers impregnated with ammonium ionic liquids for platinum(IV) recovery from chloride solutions
-
- ```

graph LR
 A[Platinum solution] --> B[Extracting Pt(IV)]
 A --> C[Sorption Pt(IV)]
 B --> D[Stripping]
 C --> E[Desorption]
 D --> F[Pt(II)]
 E --> F

```
- Fatemeh Saadat, Mohammad Mahdi Zerafat, and Sahar Foorginezhad 2273 Adsorption of copper ions from aqueous media using montmorillonite-Al<sub>2</sub>O<sub>3</sub> nano-adsorbent incorporated with Fe<sub>3</sub>O<sub>4</sub> for facile separation
- Gishedaraankumar Krishnan, Safia Syazana Mohtar, Farhana Aziz, Juhana Jaafar, Norhaniza Yusof, Wan Norharyati Wan Salleh, and Ahmad Fauzi Ismail 2287 Mixed matrix composite membranes based on amination of reduced graphene oxide for CO<sub>2</sub> separation: Effects of heating time and nanofiller loading
- Hossein Rostamian, Mohammad Nader Lotfollahi, and Ali Mohammadi 2295 Preparation, optimization, and in-vitro evaluation of aspirin/PEG solid dispersions using subcritical CO<sub>2</sub> by response surface methodology
- Shima Taheri Vardanjani, Aliakbar Roosta, and Jafar Javanmardi 2307 Natural deep eutectic solvents for enhancing the solubility of two B vitamins in aqueous solutions: Experimental study and thermodynamic aspects
- Seong Bin Jo, Ho Jin Chae, Tae Young Kim, Jeom-In Baek, Dhanusuraman Ragupathy, Soo Chool Lee, and Jae Chang Kim 2317 Thermally stable amine-functionalized silica sorbents using one-pot synthesis method for CO<sub>2</sub> capture at low temperature

## MATERIALS (Organic, Inorganic, Electronic, Thin Films)

- Wonmi Lee, Gyunho Park, Dukrye Chang, and Yongchae Kwon 2326 The effects of temperature and membrane thickness on the performance of aqueous alkaline redox flow batteries using napthoquinone and ferrocyanide as redox couple
- Bongho Lee, Jong Gyeong Kim, and Chanho Pak 2334 Investigation of fabrication methods for a cathode using a non-precious metal catalyst in polymer electrolyte membrane fuel cell
- Xiaofeng Yang, Yuepeng Zhang, Zhiping Chen, Yinshuai Yang, Hongxia Jing, Zhenhao Sun, and Huijie Wang 2340 Preparation of epoxypropyl functionalized graphene oxide and its anticorrosion properties complexed with epoxy resin

- Muhammad Fiayaz, 2351 **Synthesis and characterization of hydroxyethyl cellulose (HEC)-TiO<sub>2</sub>-based poly-urethane bionanocomposites**  
Khalid Mahmood Zia,  
Muhammad Asif Javaid,  
Saima Rehman,  
Shahzad Ali Shahid Chatha,  
and Mohammad Zuber
- Sangeeta Adhikari, Sandip Mandal, 2359 **Free-standing Ag nanoparticle-decorated MoS<sub>2</sub> microflowers grown on carbon cloth for photocatalytic oxidation of Rhodamine B**  
and Do-Heyoung Kim

#### FLUIDIZATION

---

- Akhilesh Kumar Sahu, 2368 **Influence of frictional packing limit on hydrodynamics and performance of gas-solid fluidized beds**  
Vasudevan Raghavan,  
and Bhamidi Prasad